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(57) **ABSTRACT**

Improved implantable microstimulators are covered with a biocompatible polymeric coating in order to provide increased strength to the capsule and to capture fragments of the microstimulator should it become mechanically disrupted. Such coating also makes the microstimulator safer and easier to handle. The coating may include one or more diffusible chemical agents that are released in a controlled manner into the surrounding tissue. The chemical agents, such as trophic factors, antibiotics, hormones, neurotransmitters and other pharmaceutical substances, are selected to produce desired physiological effects, to aid, support or to supplement the effects of the electrical stimulation. Further, microstimulators in accordance with the invention provide systems that prevent and/or treat various disorders associated with prolonged inactivity, confinement or immobilization of one or more muscles. Such disorders include pressure ulcers, venous emboli, autonomic dysreflexia, sensorimotor spasticity and muscle atrophy. The microstimulator systems include external control for controlling the operation of the microstimulators. The control include memory for programming preferred stimulation patterns for later activation by the patient or caregiver.

6 Claims, 5 Drawing Sheets

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